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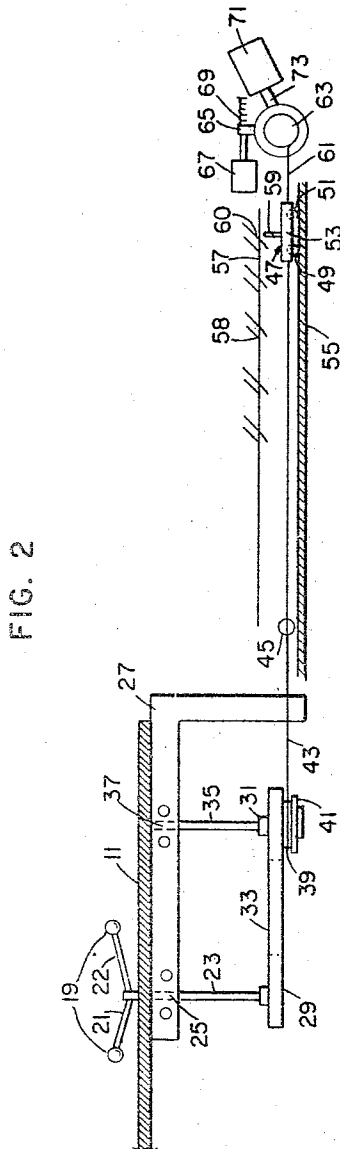
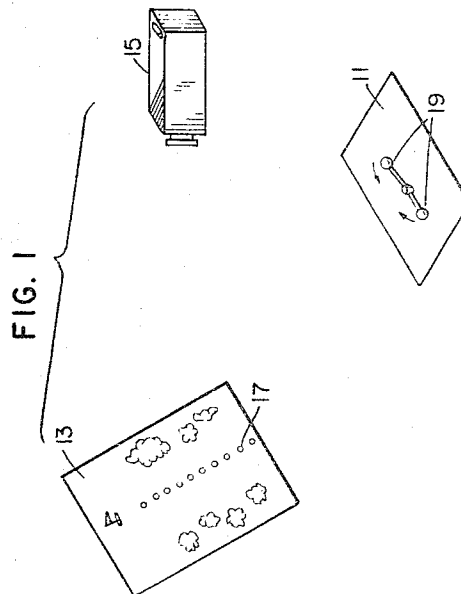
P. T. FERRANTI

3,309,927

AUTOMATIC GOLF MACHINE

Filed June 7, 1963

3 Sheets-Sheet 1



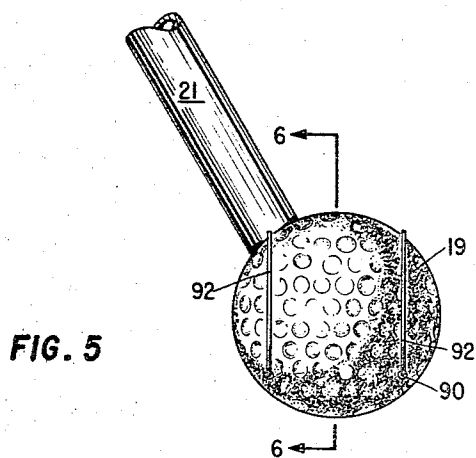
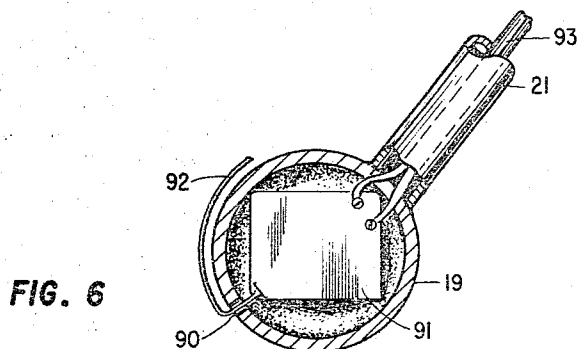
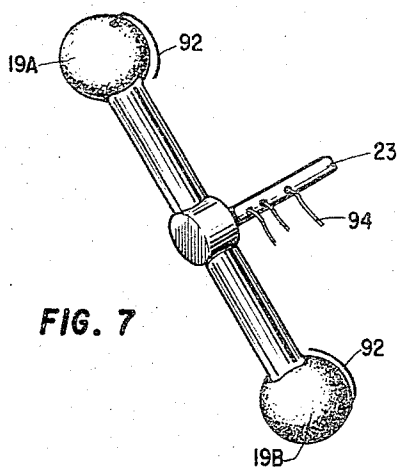
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3 Sheets-Sheet 3



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1

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AUTOMATIC GOLF MACHINE

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6 Claims. (Cl. 73-379)

This invention relates to an automatic golf machine. More particularly, this invention relates to an automatic golf machine by which a game of golf may be played from a single position either outdoors or indoors, additionally, at the same time showing movies or slides on a screen with lights to show distance ball traveled, number of strokes, position of ball and whether ball was hit squarely, hooked or sliced.

This invention is a continuation-in-part to application Ser. No. 131,517, filed Aug. 15, 1961, entitled: Automatic Golf Machine, now Patent No. 3,187,578.

While in the last few years a number of golf playing devices have been developed, most of them do not function adequately as they do not present the player with an accurate feel for the game. In other words, the prior art devices were not built in a manner which sufficiently and accurately compared the power of a golfer's stroke with the same stroke on a course.

Accordingly, it is a primary object of the present invention to disclose a golf game which when played presents a correct simulation of a golfer's ability to hit a golf ball for a distance which he would have driven the ball on a regular golf course and then putting on simulated green to practice a complete game.

It is another object of the present invention to disclose a golf game which presents the golfer with an accurate picture of a simulated course.

It is yet another object of the present invention to disclose a golf game which accurately measures the force with which a tethered golf ball is hit.

It is still another object of the present invention to disclose a simulated golf game which is capable of maintaining and computing a score as to the strokes required by a golfer to sink a ball.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view to which the game mechanism of the present invention is applied;

FIGURE 2 is vertical longitudinal diagrammatical section of the operating mechanism;

FIGURE 3 is a view of the score board;

FIGURE 4 shows more or less diagrammatically a wiring diagram showing the connections to the lamps or computers depicting paths and various switches for controlling the illumination of the lamps and controlling the motive means supplied;

FIGURE 5 is a head on view of a golf ball used in the practice of the present invention;

FIGURE 6 is a cross-sectional view taken along lines 6-6 of FIGURE 5;

FIGURE 7 is a view of the balls mounted on their respective rods.

Referring more particularly to the drawings, attention is directed to FIGURE 1 which depicts the golf game of the present invention. The golfer stands on floor portion 11. By looking towards screen 13, the participating golfer will observe a projected real image thrown on the screen by automatic sequence relay projector 15. Besides a relay projector, a movie camera may be em-

2

ployed which continuously projects a view of the fairway until the ball comes to rest at which time the movies are stopped. Additionally, the golfer will observe a plurality of lights 17 culminating at the pinnacle with the flag positioned in the hole on a golf green. The real image is a series of actual photographs taken from the tee and along the fairway of an actual golf course for each hole or driving range.

Additionally, floor portion 11 represents a golf tee upon which are rotatably mounted two golf balls 19. Golf balls 19 are mounted on the ends of steel rods 21 and 22 which are at an oblique angle with respect to floor portion 11.

Attention is now directed to FIGURE 2, where it can be seen that the rods 21 and 22 are mounted on shaft 23 as by welding or forging. Shaft 23 passes through the floor portion 11 to the underside thereof and is suitably journaled at 25 in support means 27 which may be L-shaped or constructed to form a box-like housing. Conventional construction material may be employed such as angle iron or the like. A small sprocket gear 29 is suitably keyed to the other end of shaft 23. Gear 29 is linked to a larger sprocket gear 31 by means of chain 33. Gear 31 is suitably keyed to shaft 35 which is suitably journaled at 37 to the support means 27. It will be appreciated at this point that as shaft 23 is rotated due to a force exerted on either of golf balls 19 gears 29 and 31 will rotate.

In conjunction with gear 31 is a drum-like portion 39 which may be part of the gear or may be a separate part affixed thereto. An annular ring member 41 is in juxtaposition with the opposite surface of drum portion 39. Annular ring member 41 has a nylon string 43 attached thereto near the peripheral edge thereof which may be a hole through which the nylon thread is tied. The nylon string extends horizontally towards guide 45 and the end thereof is attached to a carriage designated, generally as 47. Carriage 47 is constructed of two roller wheels 49 and 51 having a weight 53 therebetween. The carriage 47 is permitted to operate back and forth in trackway 55 which is constructed of U-shaped steel material. Overhead longitudinally and equidistant throughout with respect to the trackway 55 is a support means 57 along the underside of which are ten spring switches 58 which are normally open. Only a representative number of the switches are shown. A first switch 60, however, remains closed until reopened after being closed. An arm 59 is mounted on carriage 47 and contacts the switches 58 sequentially and momentarily as the carriage moves from right to left as exemplified by the drawing.

From FIGURE 5 the U-shaped structure of the channelled trackway 55 and in particular the mounting of a leaf spring switch 58 along the underside of support means 57 can be seen.

Another nylon string 61 is secured to the other end of carriage 47. The other end of string 61 is wound on drum 63 of a fishing reel type arrangement provided with free wheeling and engagement clutch operated by lever 65 which is actuated by solenoid 67. Lever 65 is spring loaded as at 69 to effect a normal free wheeling position. The drum reel is driven by a 24 volt motor 71 through reduction gearing box 73.

In operation carriage 47 moves to the left when string 43 is wound on drum 39 as the golf balls are given a driving force and drum reel 63 is in a free wheeling condition. The carriage moves to the right as motor 71 is energized and solenoid 67 is energized so there is clutch engagement permitting the reel 63 to wind up string 51 and unwind drum 39.

Attention is now directed to FIGURE 4, which should be considered in connection with FIGURES 1, 2 and 3.

A clearer understanding of the operation of the golf game can be obtained by considering the manner in which the game is played. The golfer while standing at floor portion 11 views on the screen a picture of the fairway as it appears from the tee to the green 500 yards away as such a picture is projected by projector 15. None of the lights 17 are lighted prior to striking one of the golf balls 19. The golfer employs any club desirable to hit one of the golf balls 19. By providing two golf balls the game may be played by either a left handed or right handed player. At the beginning of play the carriage 47 is in the position shown in FIGURE 2.

As the ball is struck by the golfer, shaft 23 is rotated for a period of time the length of which depends upon the force imparted to the ball. The greater the force the longer will the shaft rotate thereby through sprocket gears 29 and 31 and chain 33 wind up string 43 on drum 39. As the string is wound the carriage moves initially past switch 60 which remains closed as the carriage passes. Switch 60 is connected to a 24 volt line to a step down transformer 75, which is connected to a 110 volt source. Closing of switch 60 energizes a 5 second time delay switch 77 and a stepping relay 79. While the stepping relay is operated by 24 volt energy increments the relay output is at a 6 volt potential being connected by means of lead lines 80 and 81 to a 6 volt step down transformer 82 which in turn is connected to a 110 volt source. The 6 volt output from stepping relay 79 is divided into ten lead lines 83 each of which are connected to individual lamps 84.

A single lamp 84 is placed behind each of the figures 1 through 9 and one lamp behind the term "Game Over" on the scoreboard 85. The scoreboard, in other words, consists of a translucent screen having the indicia shown in FIGURE 3. Lamps are placed behind each of the numerical indicia and behind the term "Game Over." Therefore, as stepping relay 79 is initially energized as switch 60 is closed the lamp 84a is energized which is behind the digit "1" on the scoreboard 85. It will be seen that this operation informs the player that he has undertaken the first stroke.

As the carriage 47 moves further it closes the first of momentarily closed switches 58. As this is accomplished stepping relay 87 is energized through lead lines 86 and 88.

Again the output of stepping relay 87 is 6 volts being connected to a 6 volt transformer 82 through leads 89 and 90. The 6 volt output is divided into ten leads 91 which supply current to lamps 92 positioned behind the other indicia. For example as the first switch 58 is closed the two lamps behind indicia "450" and "50" are lighted as well as the lamp behind "42.5 m.p.h." Additionally, lamps 17 on screen 13 become sequentially illuminated. The significance is that this indicates that the golfer's driven ball has progressed 50 yards so that there is still remaining 450 yards as the initial distance from the tee to the flag was 500 yards. However, most golfers will be able to hit the ball, ordinarily, for a greater distance than 50 yards so that carriage 47 will move to momentarily close at least several additional switches 58 before coming to rest as the kinetic energy is utilized. As each of the additional switches are energized the lamps behind the other indicia become lighted in a sequential manner from left to right across the scoreboard and vertically up screen 13.

By adjusting the inclination of trackway 55 and weight 53 on the carriage 47 it is possible to exactly simulate the kinetic energy necessary for the ball to travel the same distance in relation to the game as it would have traversed on an actual golf course. In other words, a golfer striking the ball with an equivalent force which would make it go for a distance of 200 yards would impart sufficient kinetic energy to the golf ball to permit the carriage to be drawn past the initial switch 60 plus four switches 58 to operate the stepping relay four times there-

by illuminating the indicia "300" yards to go, "200" yards distance ball hit and "170 m.p.h."

As the carriage quickly comes to rest due to the dissipation of the kinetic energy, the 5 second time delay switch 77 permits energization of solenoid 67 and motor 71. The operation of solenoid 67 is to clutch in the motor 71 so that reel 63 rewinds string 61 returning carriage 47 to its original position. As carriage 47 moves past switch 60, the switch is opened, thereby de-energizing the motor 71 and solenoid 67.

When the golfer has hit the ball so that it has gone 200 yards the 6 volt lead being also connected to the projector, which is a commercial type conventional projector which has been modified to change slides under 6 volt energization voltage, accomplishes a change in picture projection so that the picture is now of a fairway 300 yards from the flag.

Another picture change is made when the golf ball is only 50 yards from the flag and when the game is over the projector automatically assumes the original position, showing the 500 yard view from the tee to the flag for the next game.

Assuming the score stands at 200 yards hit at the end of the first stroke, the golfer may hit the ball again. As this is done switch 60 once again energizes stepping relay 79 to indicate a second stroke and a number of switches 58 are momentarily closed to effect additional lamps to indicate the further distance theoretically traversed by the ball.

When the stepping relay 87 reaches the last output indicating that the game is over the relay projector returns to the initial picture and lead 93 operates a relay to cut off the 110 volt source may be reset in a suitable manner. Additionally, lead 93 supplies energy to return stepping relay 79 to a zero stroke position.

While the game of the present invention has been described as being operated at 500 yards from the tee to the flag, it will be appreciated that the 500 yard distance is merely an arbitrary choice depending upon the distance of an actual fairway. In view of the fact that distances between the tee and the flag usually vary from hole to hole in any given course, provision can be made in the game of the present invention by positioning the "500 yards to go" indicia on a revolving drum so that any conventional distance might be employed with other indicia printed on the surfaces of the drum.

Furthermore, while the foregoing description of the invention has appeared to ignore the putting part of the golf game, i.e., that part when the ball reaches the green, such is not the intention. On the contrary, the present invention contemplates the inclusion of a putting arrangement in order to provide true authenticity to the game.

Additionally, it is within the purview of the present invention to modify the score board to indicate distances in less than 50 yard intervals. For instance it would be possible to set up a score board showing 5, 10, 15, 20 or 25 yard intervals.

While the foregoing relates to measuring the distance a ball has been hit, the following deals with the manner in which a hook or slice may be ascertained in both right handed golfers and left handed golfers. Therefore, attention is now directed to FIGURES 5 and 6. It will be recalled from the above that the golf ball 19 is secured to rod 21 which is cored. The golf ball has two micro-switches 91 secured and wired internally of the ball. Two small openings 90 at either side of the ball along a head on view thereof permits micro-switch actuating wires 92 to pass therethrough. The wires are turned upwardly in an arcuate manner around approximately one third the circumference of the ball 19.

Cross-sectional view of FIGURE 6, shows the micro-switch in the ball and the manner in which the wire 92 embraces a portion of ball 19. Lead wires 93 pass from the micro-switches through the core of rod 21. A commutator 94 take off is provided on shaft 23 to energize

5

latching relays (not shown). Each micro-switch 19 is electrically connected to a separate latching relay. The latching relays, in turn, permit energization of suitable indicia on the score board 85.

In operation when the golf ball 19 is struck head on between wires 92 the normally open micro-switches are not closed. However, if the ball is hooked or sliced either one or the other of the wires is struck thereby momentarily closing the respective micro-switch 91. The closing of the switch energizes the latching relay which in turn activates the indicia on the score board (not shown).

Turning to FIGURE 7, it will be seen that the wires extend from the same side of the balls 19A and 19B. The golf ball 19B is for right handed golfers so that a suitable face is presented having the wires head on. Golf ball 19A is for left handed golfers so that a suitable face is presented having the wires head on.

Besides the wire actuated micro-switches, push button micro-switch is utilizable. In such an instance the micro-switch is mounted so that the button portion extends through an aperture in a head on position.

In the foregoing, an ingenious setup is described showing the manner in which the rotation of shaft 23 is translated into distance and speed of the struck ball. It will be appreciated that other devices may be employed other than the one described in detail. For instance, it would be possible to mount on shaft 23 means having a light source which rotates as a light chopper for a photoelectric cell. Additionally, a stroboscope may be employed as a tachometer. Additionally, the invention also contemplates the utilization of a flip-flop switch of the transistor type which counts the revolutions of shaft 23 and transmits such information to a digital computer.

Without further analysis it will be appreciated that the various objects of the present invention have been accomplished so that a golf game is presented which when played indicates a correct and accurate simulation of a golfer's ability to hit a golf ball for a distance which he would have driven the ball on a regular golf course and at the same time keeps score of the game as the golfer progresses.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modification and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed is:

1. An automatic golf machine comprising a golf ball mounted at the end of at least one arm, said arm being mounted on a rotatable shaft, a carriage, a trackway for said carriage, one end of a first line secured to one end of said carriage, the other end of said line secured to a drum, linkage means between said drum and said shaft for co-operation therebetween when said golf ball is driven whereby to windup said line thereby drawing said carriage in one direction, one end of a second line secured to the other end of said carriage, the other end of said second line secured to a reel, motive means to drive said reel to windup said second string thereby drawing said carriage in the other direction, a plurality of normally open electric switches positioned in a row along said trackway, said carriage having means for momentarily closing said switches as the carriage is drawn by said first line, each of said switches being in an electrical circuit to sequentially energize indicia indicating electric lamps on a scoreboard whereby to indicate the progress of said carriage, means for energizing said motive means to windup the second line thereby returning the carriage to its original position, the said golf ball having secured therein at least two micro-switches, said micro-switches having actuating wires which protrude through apertures in the golf ball and encompass circumferentially a por-

6

tion of the golf ball whereby the switches are actuated as the wire is struck, said switches being connected to means including indicia to indicate when said wires have been struck.

2. An automatic golf machine comprising a golf ball mounted at the end of at least one arm, said arm being mounted on a rotatable shaft, a carriage, a trackway for said carriage, one end of a first line secured to one end of said carriage, the other end of said line secured to a drum, linkage means between said drum and said shaft for co-operation therebetween when said golf ball is driven whereby to windup said line thereby drawing said carriage in one direction, one end of a second line secured to the other end of said carriage, the other end of said second line secured to a reel, motive means to drive said reel to windup said second string thereby drawing said carriage in the other direction, a plurality of normally open electric switches positioned in a row along said trackway, said carriage having means for momentarily closing said switches as the carriage is drawn by said first line, each of said switches being in an electrical circuit to sequentially energize indicia indicating electric lamps on a score board whereby to indicate the progress of said carriage, means for energizing said motive means to windup the second line thereby returning the carriage to its original position, a projection screen positioned forward from said golf ball having projected thereon a real image of the fairway of a golf course, said screen having a plurality of lights adapted to operate in conjunction with said score board to indicate the theoretical position of the ball after it has been driven, the said golf ball having secured therein at least two micro-switches, said micro-switches having actuating wires which protrude through apertures in the golf ball and encompass circumferentially a portion of the golf ball whereby the switches are actuated as the wire is struck, said switches being connected to means including indicia to indicate when said wires have been struck.

3. An automatic golf machine comprising a golf ball mounted at the end of at least one arm, said arm being mounted on a rotatable shaft, a sprocket gear keyed on said shaft, a sprocket gear having a larger diameter keyed to another shaft, a drum keyed to the other shaft, a chain riding on said gears for driving said drum when said golf ball is driven, a carriage, a trackway for said carriage, one end of a first line secured to one end of said carriage, the other end of said line secured to said drum to windup said line thereby drawing said carriage in one direction, one end of a second line secured to the other end of said carriage, the other end of said second line secured to a reel, motive means to drive said reel to windup said second string thereby drawing said carriage in the other direction, a plurality of normally open electric switches positioned in a row along said trackway, said carriage having means for momentarily closing said switches as the carriage is drawn by said first line, each of said switches being in an electrical circuit to sequentially energize indicia indicating electric lamps on a score board whereby to indicate the progress of said carriage, means for energizing said motive means to windup the second line thereby returning the carriage to its original position, a projection screen positioned forward from said golf ball having projected thereon a real image of the fairway of a golf course, said screen having a plurality of lights adapted to operate in conjunction with said score board to indicate the theoretical position of the ball after it has been driven, the said golf ball having secured therein at least two micro-switches, said micro-switches having actuating wires which protrude through apertures in the golf ball and encompass circumferentially a portion of the golf ball whereby the switches are actuated as the wire is struck, said switches being connected to means including indicia to indicate when said wires have been struck.

4. An automatic golf machine comprising a golf ball mounted at the end of at least one arm, said arm being

7

mounted on a rotatable shaft, a sprocket gear keyed on said shaft, a sprocket gear having a larger diameter keyed to another shaft, a drum keyed to the other shaft, a chain riding on said gears for driving said drum when said golf ball is driven, a carriage, said carriage being adapted to vary the force necessary to move it, a trackway for said carriage, one end of a first line secured to said drum to windup said line thereby drawing said carriage in one direction, one end of a second line secured to the other end of said carriage, the other end of said second line secured to a reel, motive means to drive said reel to windup said second string thereby drawing said carriage in the other direction, a plurality of normally open electric switches positioned in a row along said trackway, said carriage having means for momentarily closing said switches as the carriage is drawn by said first line, each of said switches being in an electrical circuit to sequentially energize indicia indicating electric lamps on a score board whereby to indicate the progress of said carriage, means for energizing said motive means to windup the second line thereby returning the carriage to its original position, a projection screen positioned forward from said golf ball having projected thereon a real image of the fairway of a golf course, said screen having a plurality of lights adapted to operate in conjunction with said score board to indicate the theoretical position of the ball after it has been driven, the said golf ball having secured therein at least two micro-switches, said micro-switches having actuating wires which pro-

8

trude through apertures in the golf ball and encompass circumferentially a portion of the golf ball whereby the switches are actuated as the wire is struck, said switches being connected to means including indicia to indicate when said wires have been struck.

5. A golf machine comprising a golf ball, driven by a club forcibly contacting said ball, having at least one aperture thereon, said golf ball having at least one micro-switch mounted therein; said micro-switch having actuating means positioned to protrude through said aperture whereby the switch is actuated when said golf ball is driven and said switch being electrically connected to means including indicia to indicate when said actuating means has been actuated, said golf ball being affixed to a pivot, said pivot including means for indicating the force with which said club contacts said ball.

6. The golf machine of claim 5 wherein said actuating means protruding through said aperture is a wire encompassing circumferentially a portion of the golf ball.

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